

Abstract

A novel single needle hemodiafiltration apparatus and a novel single needle hemodiafiltration method for purifying blood with excellent removal performance via extracorporeal circulation with a single needle type are provided. The single needle hemodiafiltration apparatus includes a blood supply system for supplying blood, a dialysis fluid supply system for supplying a dialysis fluid and a system for controlling a movement of a fluid between the two supply systems, and a filtration/back-filtration liquid supply unit provided in the dialysis fluid supply system is controlled in conjunction with a blood pump provided in the blood supply system so that blood is removed from the body synchronously with the filtration and returned to the body synchronously with the back-filtration, thereby enabling extracorporeal circulation with the single needle. At a time of filtration, substances are removed by diffusion and ultrafiltration. At a time of recirculation in the blood circuit, substances are removed by diffusion. A high removal efficiency that cannot be achieved by the conventional single needle blood dialysis can be achieved by appropriately selecting the stroke volume per cycle, the number and order of the filtration/back-filtration/blank phases and the blood flow rate in each phase.